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UNITED STATES DEPARTMENT OF AGRICULTURE

MISCELLANEOUS CIRCULAR No. 83

UNITED STATES STANDARD TOBACCO SIZES

PREPARED BY

FRANK B. WILKINSON, *Marketing Specialist*
Bureau of Agricultural Economics

UNDER AUTHORITY OF
THE UNITED STATES WAREHOUSE ACT
OF AUGUST 11, 1916, AS AMENDED

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Issued December, 1926

WASHINGTON
GOVERNMENT PRINTING OFFICE
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FOREWORD

The United States warehouse act provides for the establishment of tobacco standards which are required to be stated on warehouse receipts and certificates issued under the act. The length of leaf or size of tobacco has a definite relation to quality in tobacco and influences its value. In some types of tobacco the size is of such great importance that it is treated as a separate factor of the grade, and requires a definite standard of length. When the United States Department of Agriculture began to give consideration to licensing tobacco warehouses, it found that there was no standard system for sizing tobacco or stating its length. To meet this provision of the law, the system presented herein was developed.

The use of the United States standard tobacco sizes is not mandatory, and their use is not confined to persons or firms operating under the provisions of the United States warehouse act. Any of the standard sizes may be used by the trade. If representation is made that the sizing is done according to the United States standard sizes, then their specifications must be complied with. The general use of the sizes will form a definite and reliable guide to tobacco lengths.

This pamphlet is prepared to present to interested parties a simple system for sizing tobacco that may be easily used by anyone. As the use of the sizes is extended and changes occur in trade practices, it may be necessary to revise the specifications from time to time.

UNITED STATES STANDARD TOBACCO SIZES

INTRODUCTION

The factor of length has always been considered of more or less importance in the commercial grades of tobacco. To meet the requirements of manufacturers, tobacco is sized; that is, it is assorted as to length each year by farmers, packers, and dealers at a cost of thousands of dollars.

At the present time, there is no standard or uniform system of tobacco sizes in use in the United States; in fact, a great many different systems are in use. Frequently several distinct systems are in use in a single county. This multiplicity of systems and lack of uniformity has resulted in confusion, has added materially to the handling costs, and has made it difficult to obtain a uniform packing of tobacco.

The accuracy with which tobacco needs to be sized varies materially with the different types and with the quality of the tobacco within a particular type. In the grading of some types of tobacco, the length of leaf is of major importance; in other types, it is of minor importance as compared with other grade factors. In some cases in which the length is of considerable importance, the trade has used such elastic terms as "long," "medium," and "short." This loose manner of expressing the length of leaf is unsatisfactory, as the length so stated depends entirely upon individual opinion.

Although such indefinite terms are unsatisfactory, any standard of linear measure, such as the standard inch, is also unsuitable for expressing the length of tobacco. The standard inch is too definite; it does not provide for any range or variation in the length of a lot of tobacco, and therefore is impractical for commercial purposes. A standard of measurement that has some elasticity is needed for tobacco, one that permits of a range in length within certain fixed limits.

With this need in view, the United States Department of Agriculture has prepared standard tobacco

lengths for the various types and qualities of tobacco. These lengths are known as "U. S. standard tobacco sizes," or briefly, "U. S. sizes." As the accuracy with which the length of tobacco needs to be stated varies with different types and qualities of tobacco, the department has prepared six different series of sizes. In preparing these sizes careful consideration was given to the various needs and requirements of the trade. Six charts were designed to illustrate the six series of sizes and miniature copies are shown in Figures 1 to 6, inclusive.

The metric system of measurement is in use in practically all foreign countries to which we export our tobacco, with the exception of the British possessions. In order that the U. S. sizes may be clearly understood in these countries, the range of each size is expressed in centimeters as well as in inches.[1] The range in inches is indicated on the left margin of each chart and the range in centimeters on the right margin. The numbers in the center of each chart are the U. S. size numbers to which the range in inches and centimeters on the margins of the chart relate.

The sizes illustrated in Figures 1, 2, and 3 are used to state the length factor in certain grades of certain types in which the length of leaf is of great importance. For any size covered by these three charts, it is specified that 90 per cent of the leaves of the lot or package must fall within the range of the size. In order to prevent confusion in the size designations, fractional numbers are used on the chart shown in Figure 1, odd numbers on the chart shown in Figure 2, and even numbers on the chart shown in Figure 3. This arrangement of the U. S. size numbers makes it possible for the fractional numbers to be associated with the 1-inch sizes, the odd numbers with the 2-inch sizes, and the even numbers with the special 4-inch sizes. The size numbers on these charts indicate the medium or half-way point of the sizes in inches; thus each size number is easily associated with the specific range of the size.

The sizes illustrated in Figures 4, 5, and 6 are used where the length factor is not of such great importance. For each size of these three charts it is

[1] To avoid the use of small fractions in expressing the range in centimeters, 1 inch is taken as 2.5 centimeters instead of its exact equivalent 2.540005 centimeters. The difference between the range expressed in inches and in centimeters is negligible, and is allowed as a tolerance in the sizes.

specified that 75 per cent of the leaves of the lot or package must fall within the range of the size. The U. S. size numbers of these charts are based upon the fixed variation of each chart. Thus the sizes of the chart shown in Figure 4 are all in the forties, indicating the 4-inch variation in these sizes. In like manner, the sizes of the chart shown in Figure 5 are in the sixties, indicating the 6-inch variation of the sizes, and the sizes of the chart shown in Figure 6 are in the eighties, indicating the 8-inch variation of these sizes.

The specific range in inches of a particular size of the charts shown in Figures 4, 5, and 6 is easily determined from the size number. Multiply the first digit of any size number by the second digit of that number and the product will represent the lower limit of the size in inches. Add the fixed variation of the size to the lower limit thus found, and the sum is the upper limit of the size. For example: To find the actual range covered by U. S. size 43, multiply the first digit of the size number (which is 4) by the second digit of the number (which is 3), and the product (which is 12) will represent the lower limit in inches. Add to the lower limit of the size (which has been determined to be 12 inches) the fixed variation of the size (which is 4 inches), and the upper limit of the size will be found (which is 16 inches).

The following are illustrations of how the range of a size is found from the size number in the 6-inch and 8-inch series:

U. S. Size 63

$6 \times 3 = 18$ (lower limit).
$18 + 6 = 24$ (upper limit).
The range is 18 to 24 inches.

U. S. Size 82

$8 \times 2 = 16$ (lower limit).
$16 + 8 = 24$ (upper limit).
The range is 16 to 24 inches.

All of the sizes shown on the six charts are not intended for actual use in sizing tobacco. Many of the sizes, and especially those under 12 inches, are shown primarily to illustrate the system. However, some of the short sizes may be used in certain types of tobacco, such as California Turkish and cigar wrapper tobacco. For some types of tobacco a number of the longer sizes are also unnecessary.

DEFINITIONS AND RULES

The "limits of a size" are the fixed lower and upper boundaries of the size, or its minimum and maximum lengths. The limits of the sizes are in-

dicated by the horizontal lines on each chart. The numbers at the ends of each line show the actual distance, in inches and centimeters, from the base of the chart. For example: The lower limit of U. S. size 21 is 20 inches (or 50 centimeters), and the upper limit of this size is 22 inches (or 55 centimeters).

The "range of the size" is the actual length of the size expressed in terms of its lower and upper limits. For example: The range of U. S. size 21 is from 20 to 22 inches (or 50 to 55 centimeters).

The "variation of a size" is the distance between the lower and upper limits of the size. For example: The variation of U. S. size 21 is 2 inches (or 5 centimeters).

The requirements as to the percentage of leaves of a lot or package of tobacco that must fall within the range of a particular size shall apply as set forth in the requirements of each chart unless otherwise specified in the standard grades of a particular type or quality of tobacco. If in any case it is found advisable, it may be specified that all tobacco under the lower limit of the shortest size used in the grades of a particular type shall be included in such shortest size; and that all tobacco above the upper limit of the longest size used in said grades shall be included in such longest size.

When length is a factor of the standard grades of a particular type, the sizes to be used in such grades shall be specified by the United States Department of Agriculture. For types on which no sizes are specified, the choice of the sizes is optional with the trade. In the latter case the selection of the chart to be used should be governed by trade requirements, and the shortest and longest sizes necessary for a particular type and quality of tobacco are dependent upon its natural growth.

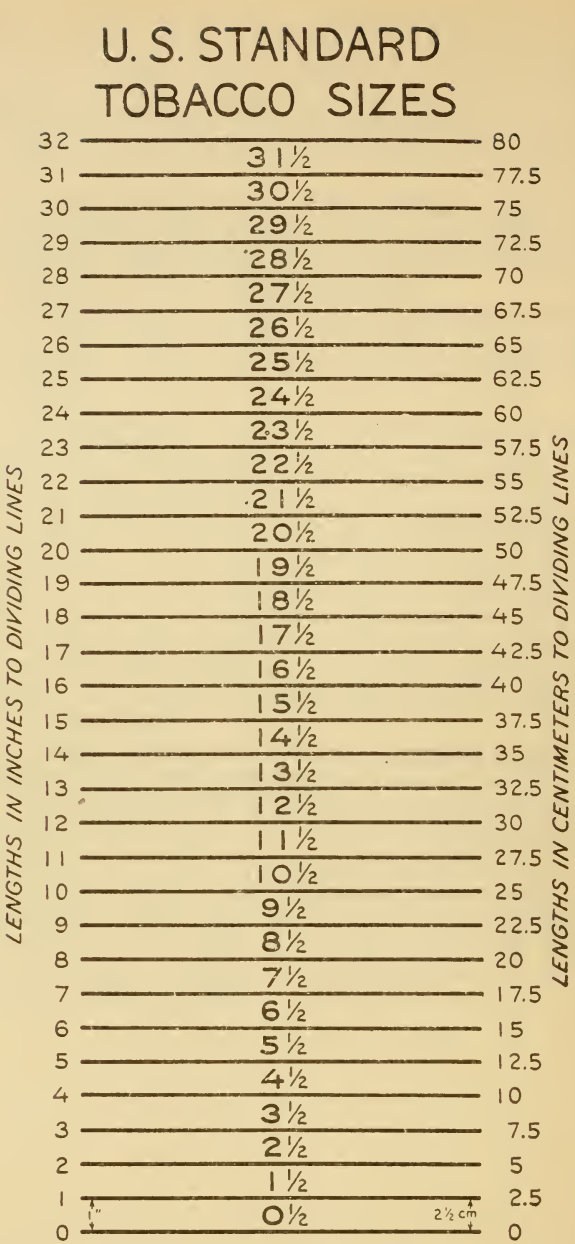

FIG. 1.—Miniature of chart illustrating the 1-inch sizes

ONE-INCH SIZES

The series of standard 1-inch sizes is illustrated by the chart shown in Figure 1. Each size of this series has a fixed variation of 1 inch (or 2½ centimeters) in length.

REQUIREMENTS

When tobacco is represented to be of any one of the standard sizes covered by the chart shown in Figure 1, 90 per cent of the leaves of the lot or package must fall within the range of such size. For example: If a lot or package of tobacco is represented to be of U. S. size 17½, then 90 per cent of the leaves of such lot or package must be between 17 and 18 inches (or 42.5 and 45 centimeters) in length.

APPLICATION

The sizes of the 1-inch series are used to state the length factor in certain grades of some types in which the length of leaf is of prime importance. These sizes are particularly applicable to the grades of shade-grown wrappers. They are not ordinarly used, on account of the extreme accuracy required, except on lots of tobbacco that have been leaf sized on sizing boards or in sizing boxes laid off according to the range of sizes shown in Figure 1.

PRINCIPAL SIZES OF CHART

The following are the principal sizes of the chart shown in Figure 1, expressed in inches and centimeters.

Standard sizes	*Range of each U. S. size*
U. S. size 10½	10 to 11 inches or 25 to 27.5 centimeters.
U. S. size 11½	11 to 12 inches or 27.5 to 30 centimeters.
U. S. size 12½	12 to 13 inches or 30 to 32.5 centimeters.
U. S. size 13½	13 to 14 inches or 32.5 to 35 centimeters.
U. S. size 14½	14 to 15 inches or 35 to 37.5 centimeters.
U. S. size 15½	15 to 16 inches or 37.5 to 40 centimeters.
U. S. size 16½	16 to 17 inches or 40 to 42.5 centimeters.
U. S. size 17½	17 to 18 inches or 42.5 to 45 centimeters.
U. S. size 18½	18 to 19 inches or 45 to 47.5 centimeters.
U. S. size 19½	19 to 20 inches or 47.5 to 50 centimeters.
U. S. size 20½	20 to 21 inches or 50 to 52.5 centimeters.
U. S. size 21½	21 to 22 inches or 52.5 to 55 centimeters.
U. S. size 22½	22 to 23 inches or 55 to 57.5 centimeters.
U. S. size 23½	23 to 24 inches or 57.5 to 60 centimeters.

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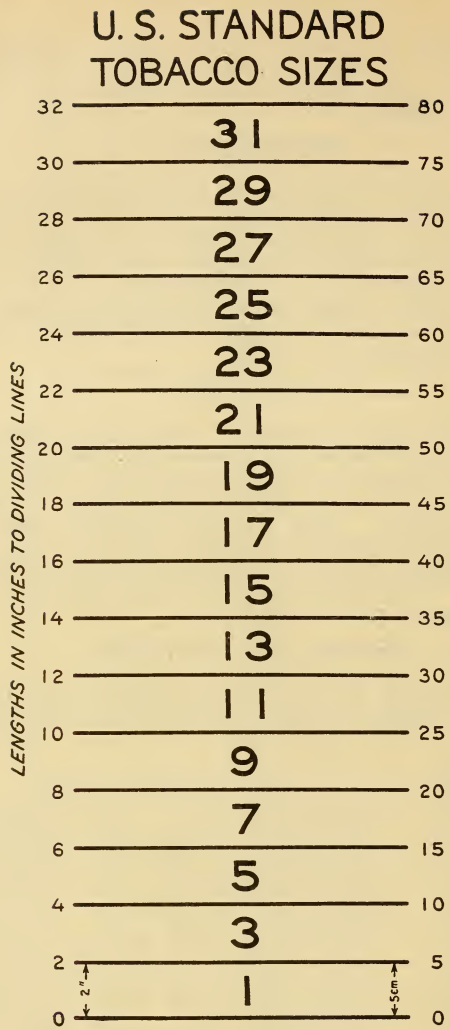

FIG. 2.—Miniature of chart illustrating the 2-inch sizes

TWO-INCH SIZES

The series of standard 2-inch sizes is illustrated by the chart shown in Figure 2. Each size of this series has a fixed variation of 2 inches (or 5 centimeters) in length.

REQUIREMENTS

When tobacco is represented to be of any one of the standard sizes covered by the chart shown in Figure 2, 90 per cent of the leaves of the lot or package must fall within the range of such size. For example: If a lot or package of tobacco is represented to be of U. S. size 23, then 90 per cent of the leaves of such lot or package must be between 22 and 24 inches (or 55 and 60 centimeters) in length.

APPLICATION

The 2-inch sizes are used on tobacco in which the length of leaf is of great importance. The sizes of this series are particularly applicable to certain grades of the cigar leaf filler and binder types. Tobacco to which these sizes are applicable is usually leaf sized before it is tied into hands. Sizing boards, sizing boxes, or sizing tables used for this purpose should be accurately laid off according to the range of sizes as shown in Figure 2.

PRINCIPAL SIZES OF CHART

The following are the principal sizes of the chart shown in Figure 2, expressed in inches and centimeters:

Standard sizes	*Range of each U. S. size*
U. S. size 13	12 to 14 inches or 30 to 35 centimeters.
U. S. size 15	14 to 16 inches or 35 to 40 centimeters.
U. S. size 17	16 to 18 inches or 40 to 45 centimeters.
U. S. size 19	18 to 20 inches or 45 to 50 centimeters.
U. S. size 21	20 to 22 inches or 50 to 55 centimeters.
U. S. size 23	22 to 24 inches or 55 to 60 centimeters.
U. S. size 25	24 to 26 inches or 60 to 65 centimeters.
U. S. size 27	26 to 28 inches or 65 to 70 centimeters.
U. S. size 29	28 to 30 inches or 70 to 75 centimeters.

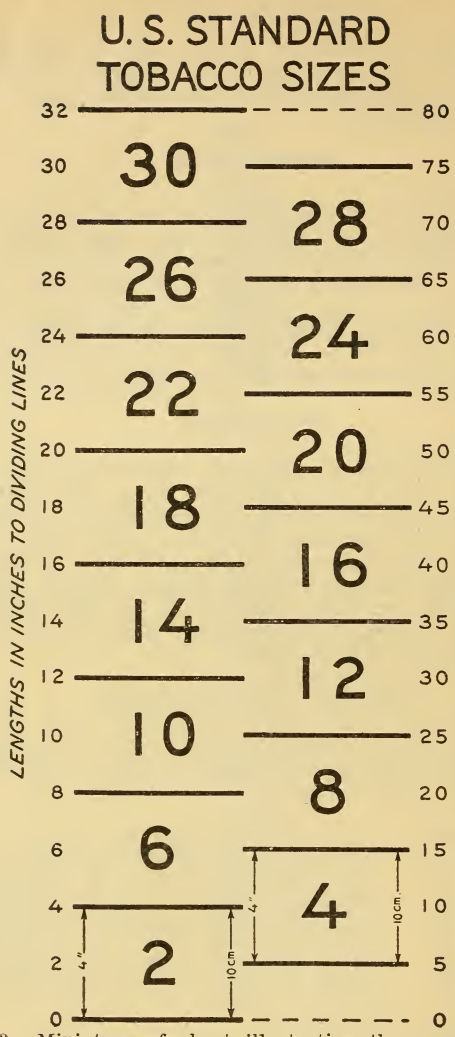

FIG. 3.—Miniature of chart illustrating the special 4-inch sizes

SPECIAL 4-INCH SIZES

A series of special 4-inch sizes is illustrated by the chart shown in Figure 3. Each size of this series has a fixed variation of 4 inches (or 10 centimeters) in length, and breaks on multiples of 2 inches (or 5 centimeters).

REQUIREMENTS

When tobacco is represented to be of any one of the standard sizes covered by the chart shown in Figure 3, 90 per cent of the leaves of the lot or package must fall within the range of such size. For example: If a lot or package of tobacco is represented to be of U. S. size 20, then 90 per cent of the leaves of such lot or package must be between 18 and 22 inches (or 45 to 55 centimeters) in length.

APPLICATION

The sizes of this series are designed primarily for stating the length of tobacco which has not been sized with a sufficient degree of accuracy to meet the requirements of the chart shown in Figure 2, but which has been sized with more uniformity than is required for the regular 4-inch sizes, covered by the chart shown in Figure 4. The special 4-inch sizes are particularly applicable to some grades of the fire-cured and air-cured types. The tobacco on which these sizes are used is not ordinarily leaf sized. The leaves of each hand should be fairly uniform in length. After the hands are tied they may be sized on a sizing board or sizing table.

PRINCIPAL SIZES OF CHART

The following are the principal sizes of the chart shown in Figure 3, expressed in inches and centimeters:

Standard sizes	*Range of each U. S. size*
U. S. size 14	12 to 16 inches or 30 to 40 centimeters.
U. S. size 16	14 to 18 inches or 35 to 45 centimeters.
U. S. size 18	16 to 20 inches or 40 to 50 centimeters.
U. S. size 20	18 to 22 inches or 45 to 55 centimeters.
U. S. size 22	20 to 24 ihches or 50 to 60 cestimeters.
U. S. size 24	22 to 26 inches or 55 to 65 centimeters.
U. S. size 26	24 to 28 inches or 60 to 70 centimeters.
U. S. size 28	26 to 30 inches or 65 to 75 centimeters.

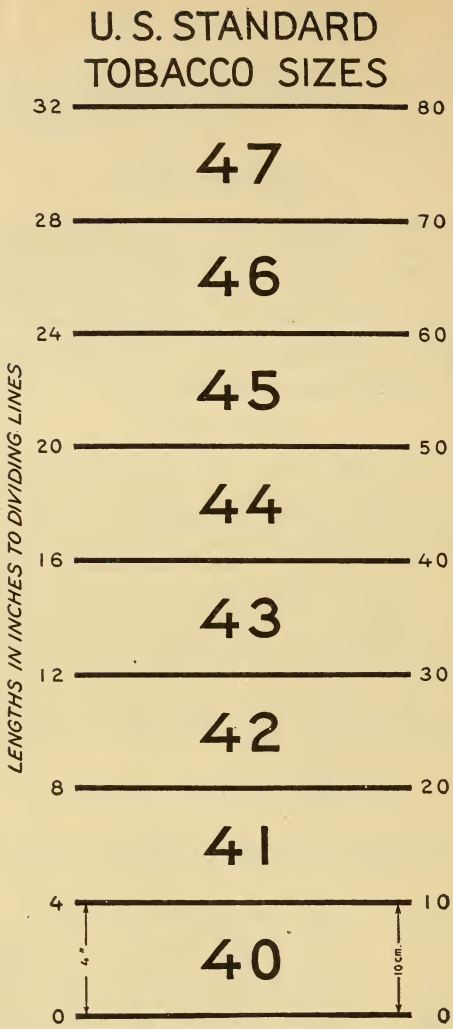

FIG. 4.—Miniature of chart illustrating the regular 4-inch sizes

REGULAR 4-INCH SIZES

The series of standard 4-inch sizes is illustrated by the chart shown in Figure 4. Each size of this series has a fixed variation of 4 inches (or 10 centimeters) in length, and breaks on multiples of this variation.

REQUIREMENTS

When tobacco is represented to be of any one of the standard sizes covered by the chart shown in Figure 4, 75 per cent of the leaves of the lot or package must fall within the range of such size. For example: If a lot or package of tobacco is represented to be of U. S. size 44, then 75 per cent of the leaves of such lot or package must be between 16 and 20 inches (or 40 and 50 centimeters) in length.

APPLICATION

The sizes of the regular 4-inch series are used to state the length factor of grades in which the length of leaf is not of such great importance. The variation of these sizes is sufficiently close for all grades of certain types and many grades of other types. These sizes are particularly applicable to the flue-cured and air-cured types, and are used to some extent in the fire-cured, as well as in most of the cigar leaf types.

PRINCIPAL SIZES OF CHART

The following are the principal sizes of the chart shown in Figure 4, expressed in inches and centimeters:

Standard sizes	*Range of each U. S. size*
U. S. size 42	8 to 12 inches or 20 to 30 centimeters.
U. S. size 43	12 to 16 inches or 30 to 40 centimeters.
U. S. size 44	16 to 20 inches or 40 to 50 centimeters.
U. S. size 45	20 to 24 inches or 50 to 60 centimeters.
U. S. size 46	24 to 28 inches or 60 to 70 centimeters.
U. S. size 47	28 to 32 inches or 70 to 80 centimeters.

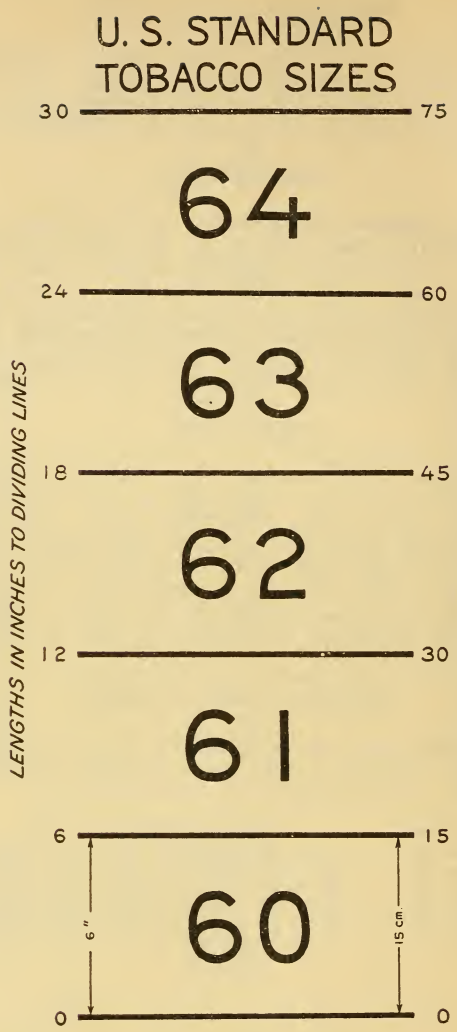

FIG. 5.—Miniature of chart illustrating the 6-inch sizes

SIX-INCH SIZES

The series of standard 6-inch sizes is illustrated by the chart shown in Figure 5. Each size of this series has a fixed variation of 6 inches (or 15 centimeters) in length.

REQUIREMENTS

When tobacco is represented to be of any one of the standard sizes covered by the chart shown in Figure 5, 75 per cent of the leaves of the lot or package must fall within the range of such size. For example: If a lot or package of tobacco is represented to be of U. S. size 63, then 75 per cent of the leaves of such lot or package must be between 18 and 24 inches (or 45 and 60 centimeters) in length.

APPLICATION

The sizes of the 6-inch series are used to state the length of tobacco when length is a factor of little importance. These sizes are designed primarily to replace such indefinite and elastic terms as long, medium, short, and very short, used in expressing the length of tobacco. These sizes are suitable for stating the length in grades which have not been so carefully and uniformly sized. Most types of tobacco can be divided into four lengths by the use of U. S. sizes 61, 62, 63, and 64.

PRINCIPAL SIZES OF CHART

The following are the principal sizes of the chart shown in Figure 5, expressed in inches and centimeters.

Standard sizes	*Range of each U. S. size*
U. S. size 61	6 to 12 inches or 15 to 30 centimeters.
U. S. size 62	12 to 18 inches or 30 to 45 centimeters.
U. S. size 63	18 to 24 inches or 45 to 60 centimeters.
U. S. size 64	24 to 30 inches or 60 to 75 centimeters.

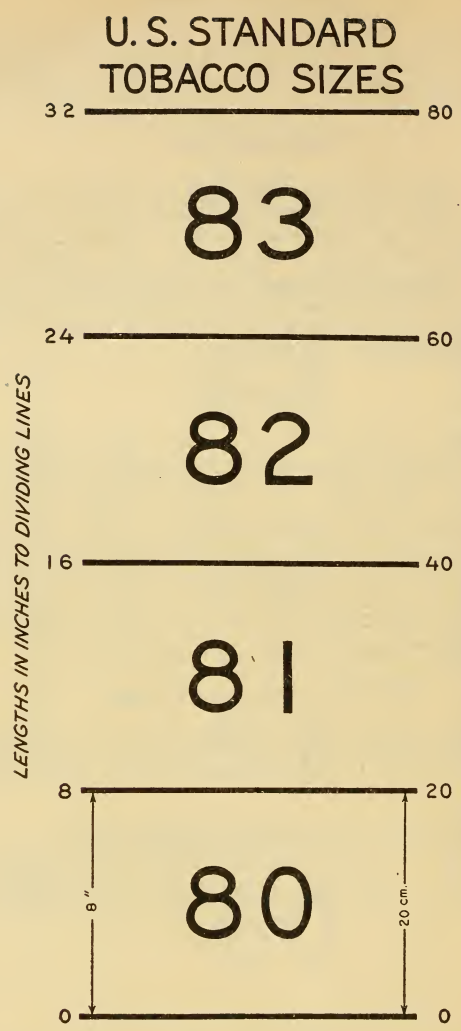

FIG. 6.—Miniature of chart illustrating the 8-inch sizes

EIGHT-INCH SIZES

The series of standard 8-inch sizes is illustrated by the chart shown in Figure 6. Each size of this series has a fixed variation of 8 inches (or 20 centimeters) in length.

REQUIREMENTS

When tobacco is represented to be of any one of the standard sizes covered by the chart shown in Figure 6, 75 per cent of the leaves of the lot or package must fall within the range of such size. For example: If a lot or package of tobacco is represented to be of U. S. size 82, then 75 per cent of the leaves of such lot or package must fall between 16 and 24 inches (or 40 and 60 centimeters) in length.

APPLICATION

The use of the 8-inch sizes is similar to that of the 6-inch sizes. On account of the wider variation, the 8-inch sizes are better adapted for broadly stating the length of leaf in some types. Although the sizes of this series cover a very wide range, they are more definite than the terms long, medium, and short. Most types can be divided into three lengths by the use of U. S. sizes 81, 82, and 83.

PRINCIPAL SIZES OF CHART

The following are the principal sizes of the chart shown in Figure 6, expressed in inches and centimeters:

Standard sizes	*Range of each U. S. size*
U. S. size 81	8 to 16 inches or 20 to 40 centimeters.
U. S. size 82	16 to 24 inches or 40 to 60 centimeters.
U. S. size 83	24 to 32 inches or 60 to 80 centimeters.

APPARATUS FOR SIZING TOBACCO

There are many different plans for constructing tobacco sizing boxes, sizing tables, and sizing boards. Nearly every tobacco growing section prefers a particular kind of apparatus. There is no need for establishing a standard kind or form of tobacco sizing box, sizing table, sizing board, or other apparatus used in sizing tobacco. All such apparatus can be constructed so as to meet the specifications of the U. S. sizes.

In determining the kind of apparatus to be used proper consideration should be given to all plans so as to select the kind that will give the best results at the

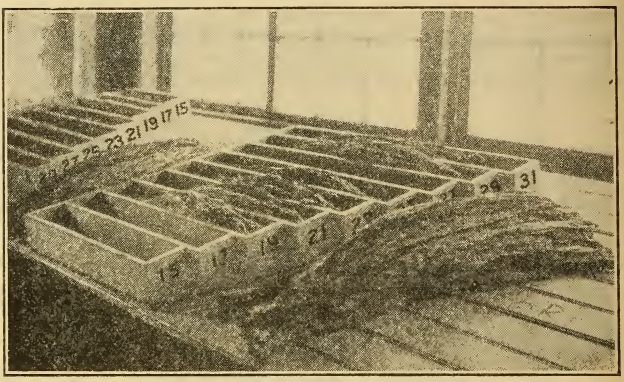

FIG. 7.—A form of tobacco sizing box or sizing tray, now in use in Pennsylvania and other cigar leaf States, with U. S. standard size designations showing on box

minimum cost. Several forms of sizing boxes have been found to be very satisfactory in leaf-sizing tobacco. These boxes, however, have not been found suitable for hand-sizing. The sizing board is suitable for hand-sizing and is equally well suited for leaf-sizing. When a number of sizes are to be made the tobacco sizing table is very useful as spaces are provided for keeping all of the sizes separate after they have been over the sizing board, which is conveniently located on the table. When only three or four sizes are to be made, the sizing table is not important, as this limited number of sizes can easily be kept separate by placing them in different piles around the board. In some cases pins or stakes are arranged

FIG. 8.—A tobacco sizing box used in New England

THREE SKETCHES OF TOBACCO SIZING-BOARDS

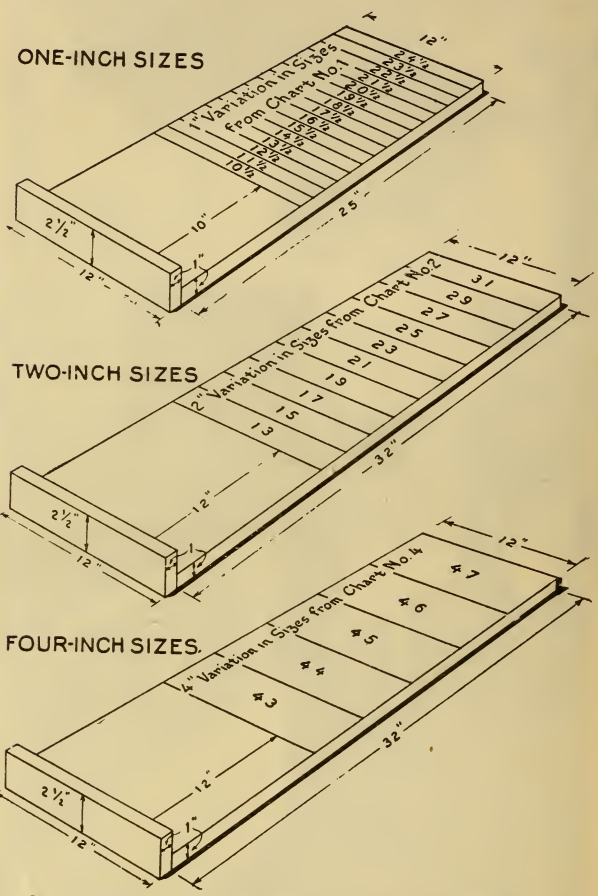

FIG. 9.—Three plans for constructing tobacco sizing boards

in upright positions in such a manner as to form stalls or bins for keeping sizes separate.

Figures 7 to 12, inclusive, are illustrations of some of the tobacco sizing apparatus in use. There are many other kinds of tobacco sizing boxes, sizing boards, and sizing tables, each of which has some special feature that makes it adapted for a particular use. The limited number of illustrations show how easily all types of construction can be made to conform to the United States standard tobacco sizes.

The sizing boxes shown in Figures 7 and 8, and all boxes of similar construction, can be made to cover any of the U. S. sizes shown on the chart illustrated in Figure 1 or on the chart illustrated in Figure 2.

FIG. 10.—Tobacco sizing boards in use

The inside length of each division should correspond with the maximum length of the U. S. sizes for which it is intended. For 1-inch sizing, the division in the box for U. S. size 10½ should be 11 inches long, for U. S. size 11½ it should be 12 inches long, etc. For 2-inch sizing, the division in the box for U. S. size 15 should be 16 inches long, for U. S. size 17 it should be 18 inches long, etc. The sizing box shown in Figure 7 is usually constructed so that each division will hold just enough leaves for one hand of tobacco. As soon as any division is filled the operator ties the leaves of the division into a hand and puts it in some other place that has been provided for that particular size. In other words, the operator does both sizing and tying in the same operation. The sizing box

men hand-sizing tobacco on the 2-inch scale by the use of sizing boards.

Figure 11 shows a plan of constructing a tobacco sizing table. The essential feature of this table is a sizing board around which are arranged stalls for keeping the several different lengths of tobacco separate after it has been sized. When tobacco is sized on either the 1-inch or the 2-inch scale, stalls are ordinarily necessary on account of the large number of different sizes. Tables of this kind may be used for either leaf sizing or hand sizing. Figure 12 shows a tobacco sizing table of similar construction in use This table has been found to be very satisfactory and it ordinarily pays for itself many times a season in the saving of labor costs.

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